back like those of a Seal, I found great difficulty, from the conformation of the skeleton, in comprehending how this could be effected. Mr. Snow writes me that "the hind flippers, when the Otter is travelling on shore, are brought under the body, but doubled up backwards, somewhat after the manner of the rough sketch enclosed, which, I may mention, has been drawn by a friend —who never has seen a Sea-Otter—from my description. This sketch [which forms the basis of the figure, p. 235] fairly represents the animal, but the hind quarters are not quite correct.

"The human hand will serve as a good illustration of the hind flippers of the Otter, the under part of the flipper corresponding to the palm of the hand. Imagine a hand, the fingers united by a thin web, the whole surface on both sides, with the exception of five small, black, naked spots on the balls of the finger, covered with hair. The Otter apparently has little or no muscular power in the finger part of its flippers, and when attempting to walk, or rather jump, along on shore, this part is doubled under the portion corresponding to the knuckles of the hand."

7. On the Hyoid Bones of *Nestor meridionalis* and *Nanodes discolor*. By St. George Mivart, M.D., F.R.S.

[Received January 15, 1896.]

In a paper read [1] before the Zoological Society on March 5th last, I described the structure of the hyoids of certain Lories, and compared them with that of *Psittacus erithacus* and that of *Stringops habroptilus*.

Therein I called attention to the processes which I named *parahyal processes*, and which, so far as I have been able to ascertain, seem peculiar to the Psittaci. I pointed out that the three genera of Lories described and figured, namely, *Eos*, *Lorius*, and *Trichoglossus*, differed from other Parrots in having these parahyal processes much prolonged and distally united, each pair forming a singularly delicate osseous structure which I termed the *parahyal arch*.

Subsequently, when considering the form of the tongue, I thought it would be very interesting to ascertain whether the two genera, the prolonged lingual papillæ of which have a certain resemblance to those of the Loriidæ, did, or did not, also possess a *parahyal arch*.

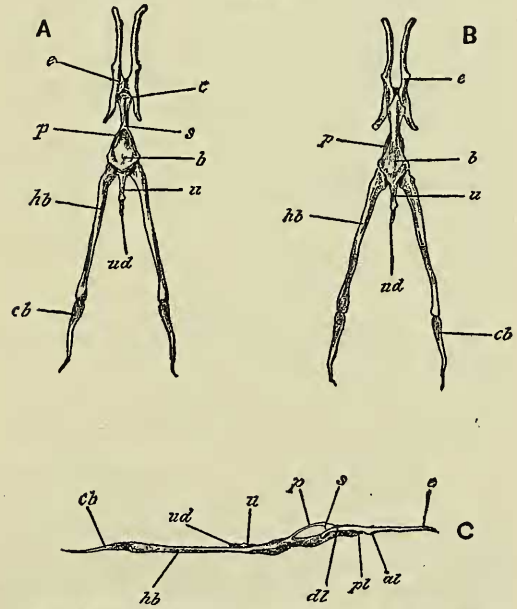
This question, through the kindness of Mr. F. E. Beddard, F.R.S., I have lately been able to determine by examining the hyoid structure of *Nestor meridionalis* and *Nanodes discolor*.

In the hyoid of *Nestor*, the *basihyal* (*b*, fig. 1, p. 237) is long and narrow, much as in the genera of Loriidæ before described. The upper end of its anterior articular surface does not project so much preaxiad as does its ventral lip. The latter is narrow and pointed,

[1] See P. Z. S. 1895, pp. 162-174, figs. 1 to 6.

while the former is laterally expanded and bears dorsally a cup-like depression (*c*). The hinder half of the basihyal bears dorsally a rounded antero-posteriorly extending ridge. The parahyal processes arise much as they do in the Lories previously described, but are exceedingly slender and meet together at a symphysis which is situated about midway between the anterior and posterior extremities of the basihyal. The symphysis is connected with the preaxial part of the basihyal by a rather vertically broad osseous band which passes obliquely backward to it from just behind

Fig. 1.



Hyoid of *Nestor meridionalis*. A. Dorsal aspect; B. Ventral aspect; C. Lateral aspect.

b. Basihyal.
e. Entoglossum.
c. Cup-like concavity.
al. Anterior lateral process.
pl. Posterior lateral process.
dl. Dorsal lateral process.
p. Parahyal arch.
s. Its symphysis.
hb. Hypobranchial.
cb. Ceratobranchial.
u. Urohyal, its larger proximal part.
ud. Urohyal, its smaller distal part.

the cup-like depression above noticed. Each lateral half of the parahyal arch has, medianly, a gentle outward curve.

The *urohyal* is decidedly longer than in the Lories, and consists of two parts—(1) a longer, proximal portion (*u*), which somewhat expands to its termination, where it is truncated; and (2) a very much smaller distal portion (*ud*), about half the length of the proximal part.

It may well be that a distinct distal part of the urohyal also existed in the species before described, but had become detached, since as to several of them it was remarked that the urohyal was truncated at the hinder end.

The *entoglossum* (*e*) differs greatly from that of the Loriidæ before described in that it is relatively, as well as absolutely, much longer and more slender. Each lateral half, each *entoglossal*, has the part in front of the isthmus, which joins it to its fellow, more than twice the length of the part behind the isthmus. The anterior parts of the two entoglossals are slender, curve outward from each other towards their preaxial ends, and terminate almost in a point. Just in front of the median bony isthmus the ventral border of the entoglossal sends downward and outward a marked process (*al*), the *anterior lateral process*; behind this is a sharp but very narrow concavity, bounded postaxially by a process (*pl*) which extends slightly downward and much inward to join its fellow of the opposite side, and so forms the concavo-convex articular surface for junction with the concavo-convex articular surface of the front end of the basihyal.

The part of each entoglossal behind the isthmus curves a little upward and inward, and then downward and outward, terminating in a slightly rounded extremity. At the summit of the curve there is a slight prominence (*dl*) on the dorsal margin, which may be called the *dorsal lateral process*.

The *hypobranchials* are about as elongated as in *Lorius*[1], but nearly straight.

The *ceratobranchials* are about half length of the *hypobranchials*, and are slightly curved concave mesiad.

Thus the genus *Nestor* shows a very interesting, but hardly surprising, affinity to the Loriidæ as regards the structure of the hyoid. It has a *parahyal arch*, but that arch is remarkable for its slenderness, as the *entoglossals* are distinguished by their length and slenderness, and differ decidedly in form from those of *Eos*, *Lorius*, and *Trichoglossus*. Thus considered, the Nestors may be thought to represent the Lories in the New Zealand region.

The interest I felt, however, in examining the hyoid of *Nestor* was greatly exceeded when I turned to the examination of that of *Nanodes*, formerly known as *Lathamus*.

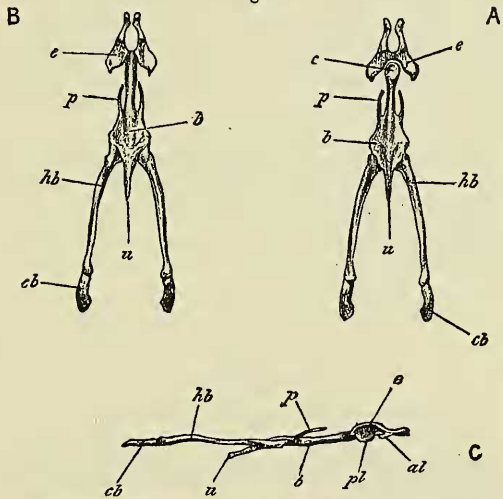
The true position of this species and its relationship or non-relationship to the Lories have been matters of controversy,

[1] P. Z. S. 1885, p. 168, fig. 3.

and were considered by our former Prosectors, Garrod[1] and Forbes[2].

Their opinion was against its Lorine affinity, and in my work (now nearly complete) on the LORIIDÆ I have excluded it from that family.

Fig. 2.



Hyoid of *Lathamus discolor*. A. Dorsal aspect; B. Ventral aspect; C. Lateral aspect.

b. Basihyal.
c. Entoglossum.
c. Cup-like concavity.
al. Anterior lateral process.
pl. Posterior lateral process.
p. Parahyal process.
hb. Hypobranchial.
cb. Ceratobranchial.
u. Urohyal.

The hyoid of *Nanodes* justifies these judgments, for the parahyal processes, though elongated, do not meet to form an arch, and the entoglossum is peculiar and different in form from those of the LORIIDÆ previously examined.

The *basihyal* (*b*) bears a singularly deep depression on its dorsal surface on either side just behind the origin of each parahyal process (*p*). The processes are long and slender, and curve slightly towards each other distally, but, as already said, do not

[1] See P. Z. S. 1873, pp. 466, 634, and 1874, p. 587.
[2] See P. Z. S. 1879, pp. 168, 171, 174, pl. xvi. figs. 1, 2, 8, 10, 12.

meet. On its ventral surface the hinder part of the basihyal is concave, the concavity being bounded on either side by a marked, oblique marginal ridge, these two ridges meeting to coalesce with the *urohyal* (*u*), which is short and straight.

The *entoglossum* (*e*) has its anterior parts rather slender, and its posterior parts greatly expanded transversely. The anterior part of each entoglossal has its dorsal margin slightly concave. Its ventral margin develops a marked *anterior lateral process* (*al*), separated by a marked concavity from (*pl*) the *posterior lateral process*. The posterior half of each entoglossal is greatly expanded, and its surface, which looks outward and downward, is strongly concave. Its dorsal margin is convex and rounded, but shows no marked *dorsal lateral process*.

The *hypobranchials* are rather short and stout compared with those of *Nestor*, but they are mainly remarkable for being deeply grooved antero-posteriorly on their dorsal surface; they are very slightly curved.

The *ceratobranchials* are extremely short bones.

My hope is to be able on some future occasion to describe certain other Psittacine hyoids.

February 18, 1896.

Prof. G. B. Howes, F.Z.S., in the Chair.

Mr. Arthur Thomson, the Society's Head Keeper, exhibited a series of specimens of various Insects reared in the Insect-house in the Society's Gardens during the past year, and read the following Report on the subject:—

Report on the Insect-house for 1895.

Examples of the following species of Insects have been exhibited in the Insect-house during the past season:—

Silk-producing Bombyces and their Allies.

Asiatic.

Attacus atlas.
—— *cynthia.*
—— *ricini.*
—— *pernyi.*
Antheræa mylitta.
**Caligula simla.*
**Rhodia fugax.*
Actias selene.
Cricula trifenestrata.

* Exhibited for the first time.

American.

Attacus lebeau.
Samia cecropia.
Actias luna.
Telea polyphemus.
Telea promethea.
Hyperchiria io.
*—— *janus.*

African.

Attacus mythimna.
**Antheræa wahlbergi.*
*—— *belina.*
—— *menippe.*
Bunea caffraria.
**Urota sinope.*
Cyrtoyone herilla.
Lasiocampa monteiri.
Eudæmonia argus.

Diurnal Lepidoptera.

European.

Papilio podalirius.
—— *machaon.*
Thais cerisyi.
Doritis apollinus.
Melitæa cinxia.
Vanessa antiopa.
—— *polychlorus.*

American.

Papilio ajax.
—— *cresphontes.*
—— *asterias.*
Limenitis disippus.
*—— *ursula.*

Nocturnal Lepidoptera.

Smerinthus populi.
—— *excæcatus.*
Sphinx ligustri.
—— *pinastri.*
—— *celeus.*
Deidamia inscriptus.
Deilephila euphorbiæ.
Darapsa myron.
**Ampelophaga versicolor.*
**Daremma undulosa.*
Ceratomia amyntor.
Eacles imperialis.
Saturnia pyri.
—— *carpini.*

* Exhibited for the first time.

Of the lepidopterous insects which I have the honour to place before the Meeting this evening, the following are exhibited for the first time:—*Limenitis ursula*, *Ampelophaga versicolor*, and *Daremma undulosa*, from North America; *Hyperchiria janus*, from South America; *Caligula simla*, from India; *Rhodia fugax*, from Japan; *Antheræa wahlbergi*, from West Africa; *Antheræa belina* and *Urota sinope*, from South Africa.

The two specimens of *Limenitis ursula* were reared from hibernating larvæ and were received along with the larvæ of *Limenitis disippus*, of which species I generally get a supply every year. These larvæ emerge from the egg in the autumn and immediately proceed to roll themselves up in the leaves of a species of willow, and in that condition pass the winter. In the spring, as soon as

the young leaves appear, they commence to feed. Last season the young larvæ of *L. disippus* appeared on the 24th of April, and on the 30th passed into the second stage, on the 7th May into the third stage, and on the 13th into the fourth stage, turned to pupæ on the 18th, and the first butterfly appeared on May 22nd. It was not until the perfect insects appeared that examples of another species were to be detected amongst them, so that the larvæ of *Limenitis ursula* and its mode of life must closely resemble those of *L. disippus*.

I have again the pleasure of exhibiting a pair of *Eudæmonia argus*, from Sierra Leone, and I may here mention that, besides the usual differences in the antennæ, the male has only four spots on the hind wings, and the female has always five.

The specimens of *Rhodia fugax* emerged from cocoons deposited in the Insect-house by the Hon. Walter Rothschild, F.Z.S. The larvæ were reared, I believe, in the neighbourhood of Richmond, on willow, from ova imported from Japan. I had some ova of this species, but the young larvæ would not feed and all died. One peculiarity of this larva is, that it makes a squeaking noise when disturbed.

The specimen of *Attacus mythimna* is the second example of this beautiful species exhibited before the Society. This species was originally described and figured, P. Z. S. 1849, p. 40, pl. vii. fig. 3, as were also *Saturnia belina* and *Urota sinope*. Of these last two species *males* only were figured. The specimens exhibited are all females.

Of Orthoptera an example of a very curious locust, *Petasia spumans*, was brought home in December and presented to the Society by Mr. Robert Gauthony, who obtained it from Krugersdorp Falls, near Johannesburg, Transvaal. It fed upon watercress and chewed apple, but I am sorry to say did not live very long in England.

The following papers were read :—

1. On the Butterflies obtained in Arabia and Somaliland by Capt. Chas. G. Nurse and Col. J. W. Yerbury in 1894 and 1895. By Arthur G. Butler, Ph.D., Senior Assistant-Keeper of Zoology, Natural History Museum.

[Received January 29, 1896.]

(Plate X.)

Although the collections now received add only a very few species to the lists of Butterflies published in my papers on the Lepidoptera of Aden and Somaliland (P. Z. S. 1884 & 1885), they are of considerable interest, inasmuch as they contain intermediate forms between species hitherto regarded as distinct.